

## IN THE CLAIMS:

1. (Withdrawn) A purified immunogenic polypeptide comprising at least 5 contiguous amino acids of an amino acid sequence selected from the group consisting of SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:6, SEQ ID NO:8, SEQ ID NO:10, SEQ ID NO:12, SEQ ID NO:14, SEQ ID NO:16, SEQ ID NO:18, SEQ ID NO:20, SEQ ID NO:22, SEQ ID NO:24, SEQ ID NO:26, SEQ ID NO:28, SEQ ID NO:30, SEQ ID NO:32, SEQ ID NO:34, SEQ ID NO:36, SEQ ID NO:38, SEQ ID NO:40, SEQ ID NO:42, SEQ ID NO:44, SEQ ID NO:46, SEQ ID NO:48, SEQ ID NO:50, SEQ ID NO:52, SEQ ID NO:54, SEQ ID NO:56, SEQ ID NO:58, SEQ ID NO:60, SEQ ID NO:62, SEQ ID NO:64, SEQ ID NO:66, SEQ ID NO:68, SEQ ID NO:70, SEQ ID NO:72, SEQ ID NO:74, SEQ ID NO:76, SEQ ID NO:78, SEQ ID NO:80, SEQ ID NO:82, SEQ ID NO:84, SEQ ID NO:86, SEQ ID NO:88, SEQ ID NO:90, SEQ ID NO:92, SEQ ID NO:94, SEQ ID NO:96, SEQ ID NO:98, SEQ ID NO:100, SEQ ID NO:102, SEQ ID NO:104, SEQ ID NO:106, SEQ ID NO:108, SEQ ID NO:110, SEQ ID NO:112, SEQ ID NO:114, SEQ ID NO:116, SEQ ID NO:118, SEQ ID NO:120, SEQ ID NO:122, SEQ ID NO:124, SEQ ID NO:126, SEQ ID NO:128, SEQ ID NO:130, SEQ ID NO:132, SEQ ID NO:134, SEQ ID NO:136, SEQ ID NO:138, SEQ ID NO:140, SEQ ID NO:142, SEQ ID NO:144, SEQ ID NO:146, SEQ ID NO:148, SEQ ID NO:150, SEQ ID NO:152, SEQ ID NO:154, SEQ ID NO:156, SEQ ID NO:158, SEQ ID NO:160, SEQ ID NO:162, SEQ ID NO:164, SEQ ID NO:166, SEQ ID NO:168, SEQ ID NO:170, SEQ ID NO:172, SEQ ID NO:174, SEQ ID NO:176, SEQ ID NO:178, SEQ ID NO:180, SEQ ID NO:182, SEQ ID NO:184, SEQ ID NO:186, SEQ ID NO:188, SEQ ID NO:190, SEQ ID NO:192, SEQ ID NO:194, SEQ ID

NO:196, SEQ ID NO:198, SEQ ID NO:200, SEQ ID NO:202, SEQ ID NO:204, SEQ ID NO:206, SEQ ID NO:208, SEQ ID NO:210, SEQ ID NO:212, SEQ ID NO:214, SEQ ID NO:216, SEQ ID NO:218, SEQ ID NO:220, SEQ ID NO:222, and SEQ ID NO:224.

2. (Withdrawn) A purified polypeptide comprising an amino acid sequence selected from the group consisting of SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:6, SEQ ID NO:8, SEQ ID NO:10, SEQ ID NO:12, SEQ ID NO:14, SEQ ID NO:16, SEQ ID NO:18, SEQ ID NO:20, SEQ ID NO:22, SEQ ID NO:24, SEQ ID NO:26, SEQ ID NO:28, SEQ ID NO:30, SEQ ID NO:32, SEQ ID NO:34, SEQ ID NO:36, SEQ ID NO:38, SEQ ID NO:40, SEQ ID NO:42, SEQ ID NO:44, SEQ ID NO:46, SEQ ID NO:48, SEQ ID NO:50, SEQ ID NO:52, SEQ ID NO:54, SEQ ID NO:56, SEQ ID NO:58, SEQ ID NO:60, SEQ ID NO:62, SEQ ID NO:64, SEQ ID NO:66, SEQ ID NO:68, SEQ ID NO:70, SEQ ID NO:72, SEQ ID NO:74, SEQ ID NO:76, SEQ ID NO:78, SEQ ID NO:80, SEQ ID NO:82, SEQ ID NO:84, SEQ ID NO:86, SEQ ID NO:88, SEQ ID NO:90, SEQ ID NO:92, SEQ ID NO:94, SEQ ID NO:96, SEQ ID NO:98, SEQ ID NO:100, SEQ ID NO:102, SEQ ID NO:104, SEQ ID NO:106, SEQ ID NO:108, SEQ ID NO:110, SEQ ID NO:112, SEQ ID NO:114, SEQ ID NO:116, SEQ ID NO:118, SEQ ID NO:120, SEQ ID NO:122, SEQ ID NO:124, SEQ ID NO:126, SEQ ID NO:128, SEQ ID NO:130, SEQ ID NO:132, SEQ ID NO:134, SEQ ID NO:136, SEQ ID NO:138, SEQ ID NO:140, SEQ ID NO:142, SEQ ID NO:144, SEQ ID NO:146, SEQ ID NO:148, SEQ ID NO:150, SEQ ID NO:152, SEQ ID NO:154, SEQ ID NO:156, SEQ ID NO:158, SEQ ID NO:160, SEQ ID NO:162, SEQ ID NO:164, SEQ ID NO:166, SEQ ID NO:168, SEQ ID NO:170, SEQ ID NO:172,

SEQ ID NO:174, SEQ ID NO:176, SEQ ID NO:178, SEQ ID NO:180, SEQ ID NO:182, SEQ ID NO:184, SEQ ID NO:186, SEQ ID NO:188, SEQ ID NO:190, SEQ ID NO:192, SEQ ID NO:194, SEQ ID NO:196, SEQ ID NO:198, SEQ ID NO:200, SEQ ID NO:202, SEQ ID NO:204, SEQ ID NO:206, SEQ ID NO:208, SEQ ID NO:210, SEQ ID NO:212, SEQ ID NO:214, SEQ ID NO:216, SEQ ID NO:218, SEQ ID NO:220, SEQ ID NO:222, and SEQ ID NO:224.

3. (Withdrawn) A purified polynucleotide comprising a sequence that encodes a polypeptide of claim 1.
4. (Withdrawn) A purified polynucleotide comprising at least about 15 contiguous nucleic acids of a sequence selected from the group consisting of SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:5, SEQ ID NO:7, SEQ ID NO:9, SEQ ID NO:11, SEQ ID NO:13, SEQ ID NO:15, SEQ ID NO:17, SEQ ID NO:19, SEQ ID NO:21, SEQ ID NO:23, SEQ ID NO:25, SEQ ID NO:27, SEQ ID NO:29, SEQ ID NO:31, SEQ ID NO:33, SEQ ID NO:35, SEQ ID NO:37, SEQ ID NO:39, SEQ ID NO:41, SEQ ID NO:43, SEQ ID NO:45, SEQ ID NO:47, SEQ ID NO:49, SEQ ID NO:51, SEQ ID NO:53, SEQ ID NO:55, SEQ ID NO:57, SEQ ID NO:59, SEQ ID NO:61, SEQ ID NO:63, SEQ ID NO:65, SEQ ID NO:67, SEQ ID NO:69, SEQ ID NO:71, SEQ ID NO:73, SEQ ID NO:75, SEQ ID NO:77, SEQ ID NO:79, SEQ ID NO:81, SEQ ID NO:83, SEQ ID NO:85, SEQ ID NO:87, SEQ ID NO:89, SEQ ID NO:91, SEQ ID NO:93, SEQ ID NO:95, SEQ ID NO:97, SEQ ID NO:99, SEQ ID NO:101, SEQ ID NO:103, SEQ ID NO:105, SEQ ID NO:107, SEQ ID NO:109, SEQ ID NO:111, SEQ ID NO:113, SEQ ID NO:115, SEQ ID NO:117, SEQ ID NO:119, SEQ ID NO:121, SEQ ID NO:123, SEQ ID NO:125, SEQ ID NO:127, SEQ ID NO:129, SEQ ID

NO:131, SEQ ID NO:133, SEQ ID NO:135, SEQ ID NO:137, SEQ ID NO:139, SEQ ID NO:141, SEQ ID NO:143, SEQ ID NO:145, SEQ ID NO:147, SEQ ID NO:149, SEQ ID NO:151, SEQ ID NO:153, SEQ ID NO:155, SEQ ID NO:157, SEQ ID NO:159, SEQ ID NO:161, SEQ ID NO:163, SEQ ID NO:165, SEQ ID NO:167, SEQ ID NO:169, SEQ ID NO:171, SEQ ID NO:173, SEQ ID NO:175, SEQ ID NO:177, SEQ ID NO:179, SEQ ID NO:181, SEQ ID NO:183, SEQ ID NO:185, SEQ ID NO:187, SEQ ID NO:189, SEQ ID NO:191, SEQ ID NO:193, SEQ ID NO:195, SEQ ID NO:197, SEQ ID NO:199, SEQ ID NO:201, SEQ ID NO:203, SEQ ID NO:205, SEQ ID NO:207, SEQ ID NO:209, SEQ ID NO:211, SEQ ID NO:213, SEQ ID NO:215, SEQ ID NO:217, SEQ ID NO:219, SEQ ID NO:221, and SEQ ID NO:223, or degenerate variants thereof.

5. (Withdrawn) A purified polynucleotide comprising the nucleotide sequence of SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:5, SEQ ID NO:7, SEQ ID NO:9, SEQ ID NO:11, SEQ ID NO:13, SEQ ID NO:15, SEQ ID NO:17, SEQ ID NO:19, SEQ ID NO:21, SEQ ID NO:23, SEQ ID NO:25, SEQ ID NO:27, SEQ ID NO:29, SEQ ID NO:31, SEQ ID NO:33, SEQ ID NO:35, SEQ ID NO:37, SEQ ID NO:39, SEQ ID NO:41, SEQ ID NO:43, SEQ ID NO:45, SEQ ID NO:47, SEQ ID NO:49, SEQ ID NO:51, SEQ ID NO:53, SEQ ID NO:55, SEQ ID NO:57, SEQ ID NO:59, SEQ ID NO:61, SEQ ID NO:63, SEQ ID NO:65, SEQ ID NO:67, SEQ ID NO:69, SEQ ID NO:71, SEQ ID NO:73, SEQ ID NO:75, SEQ ID NO:77, SEQ ID NO:79, SEQ ID NO:81, SEQ ID NO:83, SEQ ID NO:85, SEQ ID NO:87, SEQ ID NO:89, SEQ ID NO:91, SEQ ID NO:93, SEQ ID NO:95, SEQ ID NO:97, SEQ ID NO:99, SEQ ID NO:101, SEQ ID NO:103, SEQ ID NO:105, SEQ ID NO:107, SEQ ID NO:109, SEQ

ID NO:111, SEQ ID NO:113, SEQ ID NO:115, SEQ ID NO:117, SEQ ID NO:119, SEQ ID NO:121, SEQ ID NO:123, SEQ ID NO:125, SEQ ID NO:127, SEQ ID NO:129, SEQ ID NO:131, SEQ ID NO:133, SEQ ID NO:135, SEQ ID NO:137, SEQ ID NO:139, SEQ ID NO:141, SEQ ID NO:143, SEQ ID NO:145, SEQ ID NO:147, SEQ ID NO:149, SEQ ID NO:151, SEQ ID NO:153, SEQ ID NO:155, SEQ ID NO:157, SEQ ID NO:159, SEQ ID NO:161, SEQ ID NO:163, SEQ ID NO:165, SEQ ID NO:167, SEQ ID NO:169, SEQ ID NO:171, SEQ ID NO:173, SEQ ID NO:175, SEQ ID NO:177, SEQ ID NO:179, SEQ ID NO:181, SEQ ID NO:183, SEQ ID NO:185, SEQ ID NO:187, SEQ ID NO:189, SEQ ID NO:191, SEQ ID NO:193, SEQ ID NO:195, SEQ ID NO:197, SEQ ID NO:199, SEQ ID NO:201, SEQ ID NO:203, SEQ ID NO:205, SEQ ID NO:207, SEQ ID NO:209, SEQ ID NO:211, SEQ ID NO:213, SEQ ID NO:215, SEQ ID NO:217, SEQ ID NO:219, SEQ ID NO:221, and SEQ ID NO:223, or degenerate variants thereof.

6. (Withdrawn) An expression vector comprising the polynucleotide of claim 4 operably linked to an expression control sequence.
7. (Withdrawn) A cultured cell comprising the vector of claim 6.
8. (Withdrawn) A cultured cell comprising the polynucleotide of claim 4, wherein the polynucleotide is operably linked to an expression control sequence.
9. (Withdrawn) An antibody or a fragment thereof that specifically binds to a polypeptide of claim 1.
10. (Withdrawn) The antibody or fragment thereof of claim 9, wherein the fragment is selected from the group consisting of Fab and F(ab')<sub>2</sub>.

11. (Withdrawn) The antibody of claim 9, wherein the antibody is a monoclonal antibody or a polyclonal antibody.
12. (Withdrawn) A composition comprising the antibody of claim 9 and a pharmaceutically acceptable carrier.
13. (Withdrawn) A method for treating, ameliorating, or preventing a disease caused by *A. actinomycetemcomitans* comprising administering to an animal the antibody or fragment thereof of claim 9, whereby a disease caused by *A. actinomycetemcomitans* is treated, ameliorated, or prevented.
14. (Withdrawn) The method of claim 13, wherein the disease is selected from the group consisting of localized prepubertal periodontitis, generalized prepubertal periodontitis, localized juvenile periodontitis, generalized juvenile periodontitis, rapidly progressive adult periodontitis, refractory adult periodontitis, endocarditis, thyroid gland abscess, urinary tract infection, brain abscess and vertebral osteomyelitis.
15. (Currently Amended) A method of detecting the presence of *A. actinomycetemcomitans* or an *A. actinomycetemcomitans* antigen in a test sample comprising:
- contacting a test sample with an antibody or a fragment thereof that specifically binds to a purified immunogenic polypeptide comprising at least 5 contiguous amino acids of SEQ ID NO:52, wherein the antibody or fragment thereof specifically binds *A. actinomycetemcomitans* or an *A. actinomycetemcomitans* antigen under conditions that allow formation [[or]] of an immunocomplex between the antibody and the *A. actinomycetemcomitans* or the *A. actinomycetemcomitans* antigen; and

detecting an immunocomplex,

wherein detection of the immunocomplex indicates the presence of *A. actinomycetemcomitans* or an *A. actinomycetemcomitans* antigen in the test sample.

16. (Original) The method of claim 15, wherein the *A. actinomycetemcomitans* antigen is expressed *in vivo* during infection of an animal.

17. (Withdrawn) A pharmaceutical composition comprising a polypeptide of claim 1 and a pharmaceutically acceptable carrier.

18. (Withdrawn) A method of eliciting an immune response comprising administering the purified polypeptide of claim 1 to an animal, wherein an immune response is elicited.

19. (Withdrawn) A method of treating, preventing, or ameliorating a disease or infection caused by *A. actinomycetemcomitans* comprising administering the purified polypeptide of claim 1 to an animal, wherein the disease or infection is treated, prevented, or ameliorated.

20. (Withdrawn) The method of claim 19, wherein the disease is selected from the group consisting of localized prepubertal periodontis, generalized prepubertal periodontis, localized juvenile periodontis, generalized juvenile periodontis, rapidly progressive adult periodontis, refractory adult periodontis, endocarditis, thyroid gland abscess, urinary tract infection, brain abscess and vertebral osteomyelitis

21. (Withdrawn) A composition comprising a polynucleotide of claim 4 and a pharmaceutically acceptable carrier.

22. (Withdrawn) The composition of claim 21 wherein the polynucleotide is DNA.

23. (Withdrawn) The composition of claim 21 wherein the polynucleotide is in a plasmid.

24. (Withdrawn) A method of eliciting an immune response comprising administering the purified polynucleotide of claim 4 to an animal, wherein an immune response is elicited.

25. (Withdrawn) A method of treating, preventing, or ameliorating a disease or infection caused by *A. actinomycetemcomitans* comprising administering the purified polynucleotide of claim 4 to an animal, wherein the disease or infection is treated, prevented, or ameliorated.

26. (Withdrawn) The method of claim 25, wherein the disease is selected from the group consisting of localized prepubertal periodontitis, generalized prepubertal periodontitis, localized juvenile periodontitis, generalized juvenile periodontitis, rapidly progressive adult periodontitis, refractory adult periodontitis, endocarditis, thyroid gland abscess, urinary tract infection, brain abscess and vertebral osteomyelitis.

27. (Withdrawn) A method for identifying the presence of a first *A. actinomycetemcomitans* polynucleotide in a test sample comprising:

contacting a test sample suspected of containing the first polynucleotide with a second polynucleotide, wherein the second polynucleotide is a polynucleotide of claim 4, under hybridization conditions; and

detecting a hybridized first and second polynucleotide complex,

wherein the presence of a hybridized first and second polynucleotide indicates the presence of a first polynucleotide in the test sample.

28. (Previously Presented) A method of detecting presence of an *A. actinomycetemcomitans* antibody in a test sample comprising:



contacting a test sample with a purified immunogenic polypeptide comprising at least 5 contiguous amino acids of SEQ ID NO:52, wherein the polypeptide specifically binds an *A. actinomycetemcomitans* antibody under conditions that allow formation of an immunocomplex between the antibody and the polypeptide; and

detecting an immunocomplex,

wherein detection of the immunocomplex indicates the presence of *A. actinomycetemcomitans* antibody in the test sample.

29. (Currently Amended) A method of detecting the presence of *A. actinomycetemcomitans* or an *A. actinomycetemcomitans* antigen in a test sample comprising:

contacting a test sample with an antibody or a fragment thereof that specifically binds to a purified immunogenic polypeptide comprising SEQ ID NO:52, wherein the antibody or fragment thereof specifically binds *A. actinomycetemcomitans* or an *A. actinomycetemcomitans* antigen under conditions that allow formation [[or]] of an immunocomplex between the antibody and the *A. actinomycetemcomitans* or the *A. actinomycetemcomitans* antigen; and

detecting an immunocomplex,

wherein detection of the immunocomplex indicates the presence of *A. actinomycetemcomitans* or an *A. actinomycetemcomitans* antigen in the test sample.

30. (Previously Presented) The method of claim 29, wherein the *A. actinomycetemcomitans* antigen is expressed *in vivo* during infection of an animal.

31. (Previously Presented) A method of detecting presence of an *A. actinomycetemcomitans* antibody in a test sample comprising:

contacting a test sample with a purified immunogenic polypeptide comprising SEQ ID NO:52, wherein the polypeptide specifically binds an *A. actinomycetemcomitans* antibody under conditions that allow formation of an immunocomplex between the antibody and the polypeptide; and

detecting an immunocomplex,

wherein detection of the immunocomplex indicates the presence of *A. actinomycetemcomitans* antibody in the test sample.

32. (New) A method of detecting the presence of *A. actinomycetemcomitans* or an *A. actinomycetemcomitans* antigen in a test sample comprising:

contacting a test sample with an antibody or a fragment thereof that specifically binds to a purified immunogenic polypeptide consisting of SEQ ID NO:52, wherein the antibody or fragment thereof specifically binds *A. actinomycetemcomitans* or an *A. actinomycetemcomitans* antigen under conditions that allow formation of an immunocomplex between the antibody and the *A. actinomycetemcomitans* or the *A. actinomycetemcomitans* antigen; and

detecting an immunocomplex,

wherein detection of the immunocomplex indicates the presence of *A. actinomycetemcomitans* or an *A. actinomycetemcomitans* antigen in the test sample.

33. (New) The method of claim 32, wherein the *A. actinomycetemcomitans* antigen is expressed *in vivo* during infection of an animal.

34. (New) A method of detecting presence of an *A. actinomycetemcomitans* antibody in a test sample comprising:

contacting a test sample with a purified immunogenic polypeptide consisting of SEQ ID NO:52, wherein the polypeptide specifically binds an *A. actinomycetemcomitans* antibody under conditions that allow formation of an immunocomplex between the antibody and the polypeptide; and

detecting an immunocomplex,

wherein detection of the immunocomplex indicates the presence of *A. actinomycetemcomitans* antibody in the test sample.

35. (New) A method of detecting the presence of *A. actinomycetemcomitans* or an *A. actinomycetemcomitans* antigen in a test sample comprising:

contacting a test sample with an antibody or a fragment thereof that specifically binds to a purified immunogenic polypeptide consisting of SEQ ID NO:52, wherein the antibody or fragment thereof specifically binds *A. actinomycetemcomitans* or an *A. actinomycetemcomitans* antigen under conditions that allow formation of an immunocomplex between the antibody and the *A. actinomycetemcomitans* or the *A. actinomycetemcomitans* antigen; and

detecting an immunocomplex,

wherein detection of the immunocomplex indicates the presence of *A. actinomycetemcomitans* or an *A. actinomycetemcomitans* antigen in the test sample.

36. (New) The method of claim 35, wherein the *A. actinomycetemcomitans* antigen is expressed *in vivo* during infection of an animal.

37. (New) A method of detecting presence of an *A. actinomycetemcomitans* antibody in a test sample comprising:

contacting a test sample with a purified immunogenic polypeptide consisting of SEQ ID NO:52, wherein the polypeptide specifically binds an *A. actinomycetemcomitans* antibody under conditions that allow formation of an immunocomplex between the antibody and the polypeptide; and

detecting an immunocomplex,

wherein detection of the immunocomplex indicates the presence of *A. actinomycetemcomitans* antibody in the test sample.